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B. S. KING
ELECTRIC FAN

2,722,374

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2 Sheets-Sheet 1

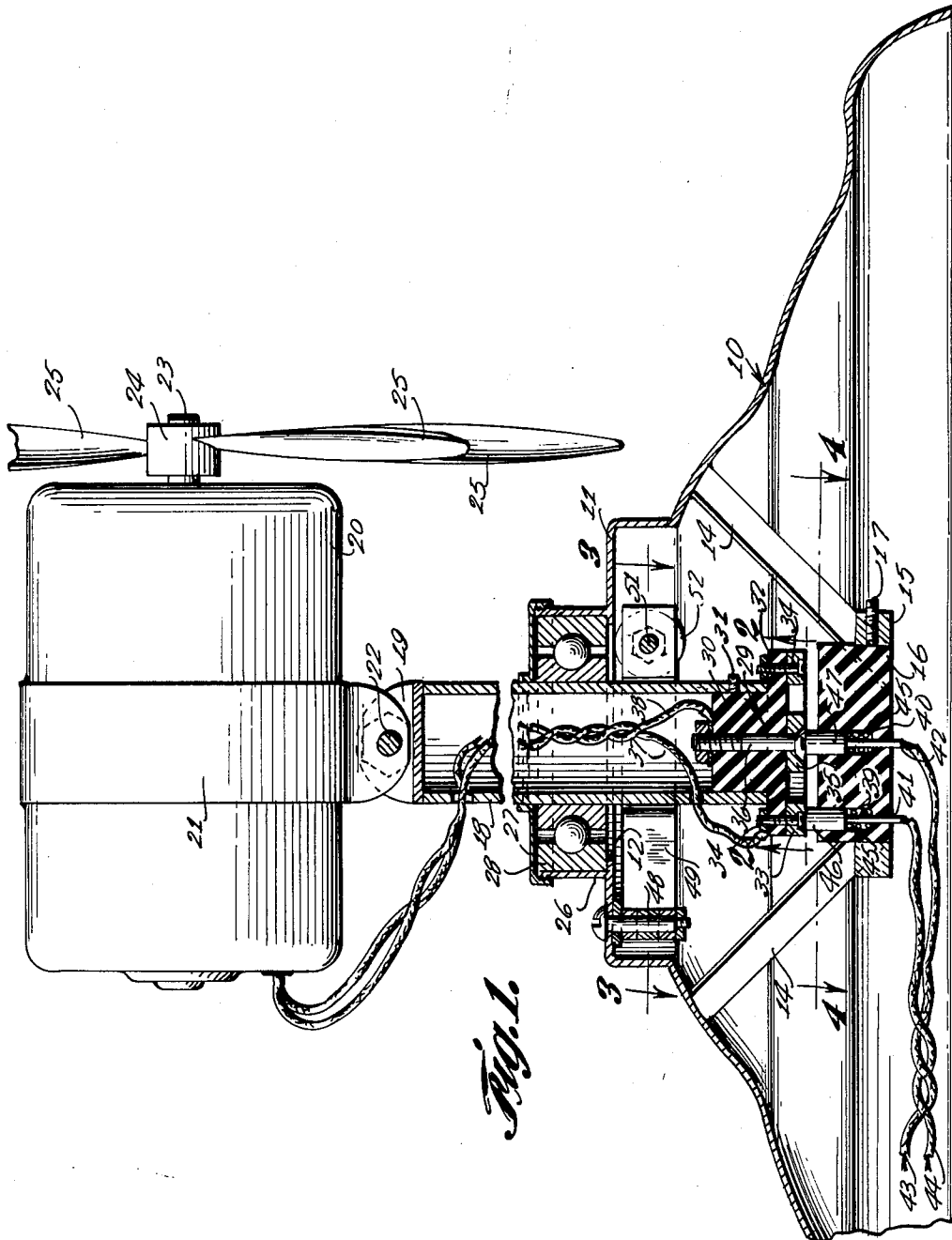


Fig. 1.

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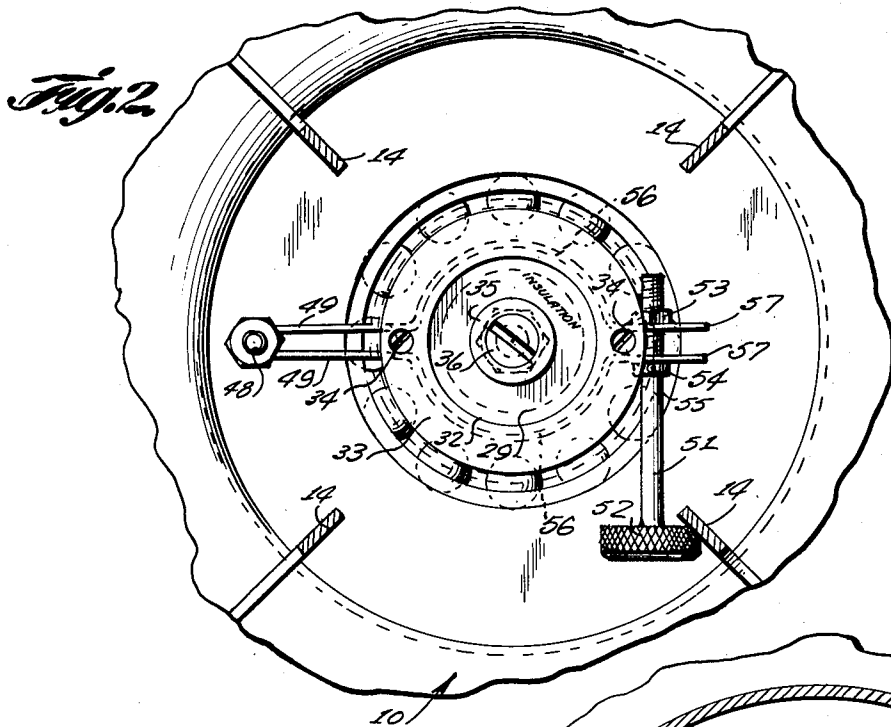
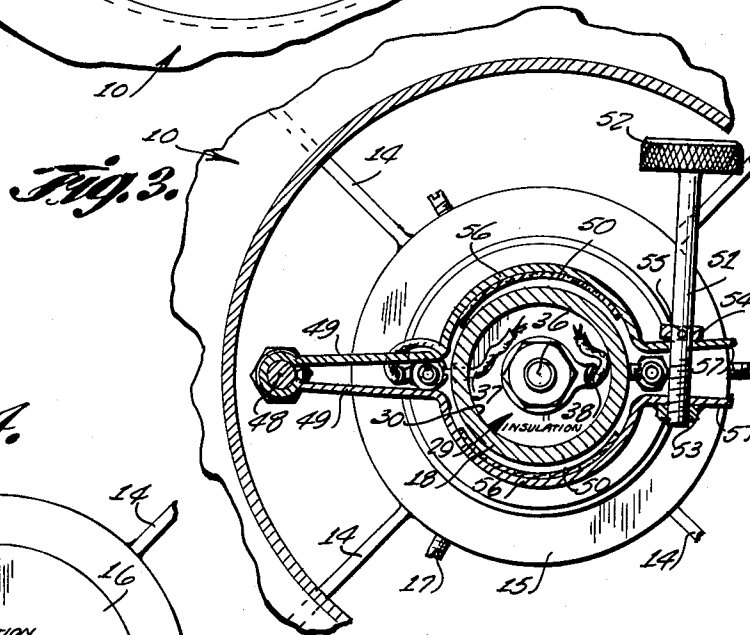
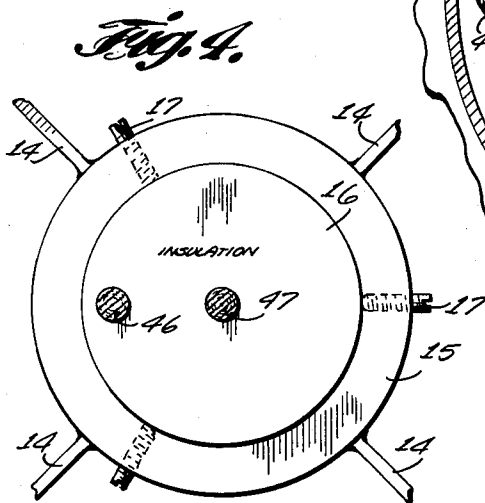
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ELECTRIC FAN

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5 Claims. (Cl. 230—254)

This invention relates to an electric fan.

The object of the invention is to provide an electric fan which includes a motor and blades that rotate 360 degrees so as to efficiently cool a room or other place where the fan is being used, there being a manually operable means for controlling the direction of rotation of the motor and blades as well as the speed of rotation thereof.

Another object of the invention is to provide an electric fan which includes a novel means for continuously supplying electrical energy to the motor as it rotates through an arc of 360 degrees.

A further object of the invention is to provide an electric fan which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

Figure 1 is a side elevational view of the electric fan, constructed according to the present invention, and with parts broken away and in section.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a sectional view taken on the line 4—4 of Figure 1.

Referring in detail to the drawings, the numeral 10 designates a hollow base which can be made of any suitable material, and the base 10 includes a top wall 11 that is provided with a central opening 12 for a purpose to be later described. Depending from the base 10 and secured therein is a plurality of inclined arms 14 which have their lower ends secured to a bracket 15, Figure 1. Snugly positioned within the bracket 15 is a body member 16 that is made of suitable insulating material. A set screw 17 extends through the bracket 15 and into engagement with the body member 16 for maintaining the body member 16 immobile in its proper position.

Rotatably extending through the opening 12 in the top of the base 10 is a hollow tube 18. Extending upwardly from the tube 18 and secured thereto or formed integral therewith is a pair of apertured ears 19. Pivotaly mounted on top of the rotatable tube 18 is a conventional electric motor 20 which has a clamp 21 extending therearound, and the clamp 21 is pivotally connected to the ears 19 by means of a bolt and nut assembly 22. The motor 20 serves to rotate a shaft 23 which has a bushing 24 mounted thereon, and a plurality of fan blades 25 extend outwardly from the bushing 24 so that when the motor is actuated, the blades 25 will rotate to thereby create a draft and cool a room or other locality where the fan is being used.

Projecting upwardly from the top wall 11 of the base 10 is an annular collar 26 which has a cap 27 mounted thereon, and the tube 18 extends rotatably through the

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cap 27. A ball bearing assembly 28 is positioned within the collar 26, and the ball bearing assembly 28 serves to minimize friction between the rotating parts.

Supported in the lower end of the tube 18 is a support member 29 which is also made of insulating material as is the body member 16. The support member 29 includes a central portion 30 which projects upwardly into the tube 18, and the central portion 30 is held in place by means of a set screw 31. An annular flange 32 is arranged on the lower end of the support member 29, and a pair of concentrically arranged metal rings 33 and 35 are secured to the support member 29. The ring 33 which is the outermost ring, is secured to the support member 29 by suitable bolt and nut assemblies 34, while the innermost ring or terminal 35 may be secured in place to the support member 29 by means of a bolt and nut assembly 36. Electric wires 37 and 38 lead from one of the bolt and nut assemblies 34 and from the bolt and nut assembly 36 to the motor 20.

The body member 16 is provided with a pair of spaced apart openings or bores 39 and 40, and contacts 46 and 47 are reciprocally or slidably mounted in these bores. A stem 41 depends from the contact 46, and a similar stem 42 depends from the other contact 47. Wires 43 and 44 serve to connect the contact stems to a suitable source of electrical energy. A coil spring 45 is circumposed on each of the stems for urging the contacts 46 and 47 into electrical engagement with the members 33 and 35 so that as the tube 18 rotates, electrical energy will be continuously supplied to the motor 20.

A brake means is provided for controlling rotation of the tube 18, and this brake means comprises a pin 48 which depends from the top wall 11. A pair of hinge plates 49 are hingedly mounted on the pin 48, and each of the plates 49 includes a curved portion 56 that surrounds a portion of the tube 18. Brake linings 50 are arranged or secured to the inner surfaces of the curved portions 56, and the brake linings 50 are mounted for movement into and out of frictional engagement with the tube 18. Extending from each of the curved portions 56 is a lip 57. A shank 51 extends through the pair of lips 57, and a knurled knob 52 is provided for rotating the shank 51. One end of the shank 51 is threaded for engagement with a plug or nut 53 which may be welded to one of the lips 57, and a stop member 54 is secured to the shank 51 by means of a pin 55. Thus, by manually rotating the shank 51 by means of the knob 52, the lips 57 can be moved toward and away from each other so that the plates will cause the brake linings 50 to move towards or away from the tube 18 so that the rotation of the tube can be controlled.

From the foregoing it is apparent that there has been provided an electric fan which includes a motor 20 that drives the fan blades 25. The motor 20 is pivotally mounted on top of the tube 18 through the medium of the bolt and nut assembly 22, and the tube 18 is rotatably mounted in the base 10. In use, when electrical energy is supplied to the motor 20, the blades 25 will rotate and this will create a draft to cool a room or other locality where the fan is positioned. At the same time, this rotation of the blades 25 will cause simultaneous rotation of the motor 20 and tube 18 so that the motor will swing around in an arc of 360 degrees and will continually rotate about a vertical axis extending through the tube 18. Electrical current or energy is supplied continuously even though the tube 18 is rotated through the medium of the spring pressed contacts 46 and 47 which are urged into engagement with the members 33 and 35 by means of the springs 45. By loosening the bolt and nut assembly 22 and tilting the motor 20 forwardly, and then again tightening the bolt and nut assembly 22, the motor 20 and tube 18 can be caused to rotate in one direction. Similarly, by

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tilting the motor 20 backward slightly, the tube 18 and motor 20 will rotate in the opposite direction. The brake including the brake linings 50 can be moved into frictional engagement with the tube 18 by means of the knurled knob 52 so as to control the speed of rotation of the tube 18. Thus, by varying the amount of pressure or friction exerted by the linings 50 on the tube 18, the tube will be caused to rotate at a faster or slower speed.

The fan of the present invention is neatly and streamlined in its construction. By tightening the brake linings 50 on the tube 18, the motor and tube can be held stationary. By adjusting the motor 20 backward past the perpendicular, the fan will rotate in one direction, and by adjusting the motor forwardly, the fan will rotate in the opposite direction. The collar 26 forms an enclosure for the ball bearing assembly 28. By providing the pair of brake linings 50, there will be equal pressure exerted on opposite sides of the tube 18. The springs 45 constantly urge the contacts 46 and 47 upwardly so that a good contact will be maintained even though the parts become worn from wear.

I claim:

1. An electric fan comprising a hollow base including a top wall provided with a central opening, a hollow tube extending rotatably through the opening in said top wall, a plurality of inclined arms secured within said base, a hollow bracket secured to the lower ends of said arms, an insulated body member positioned within said bracket, a set screw extending through said bracket into engagement with said body member, there being a pair of bores in said body member, each including a lower portion and an upper portion of increased diameter, there being a shoulder between the upper and lower portions of said bores, a pair of contacts slidably positioned in said bores and each having a stem extending through the lower portion of said bores, wires connecting said stems to a source of electrical energy, an insulated support member including a central portion projecting into the lower end of said tube and secured thereto, an annular flange on the lower end of said support member abutting the bottom of said tube, a pair of concentrically arranged conducting members secured to said support member and engaged by said contacts, a pair of apertured ears extending upwardly from said tube, a motor including a clamp pivotally connected to said ears, a pair of wires connecting said motor to said pair of conducting members, and blades rotated by said motor.

2. The apparatus as described in claim 1, and further including a coil spring circumposed on each of said stems for urging said contacts upwardly.

3. The apparatus as described in claim 1, and further including a manually operable brake for controlling rotation of said tube.

4. An electric fan comprising a hollow base including a top wall provided with a central opening, a hollow tube extending rotatably through the opening in said top wall, a plurality of inclined arms secured within said base, a hollow bracket secured to the lower ends of said arms, an insulated body member positioned within said bracket, a set screw extending through said bracket into engagement with said body member, there being a pair of bores

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in said body member, each including a lower portion and an upper portion of increased diameter, there being a shoulder between the upper and lower portions of said bores, a pair of contacts slidably positioned in said bores and each having a stem extending through the lower portion of said bores, wires connecting said stems to a source of electrical energy, an insulated support member including a central portion projecting into the lower end of said tube and secured thereto, an annular flange on the lower end of said support member abutting the bottom of said tube, a pair of concentrically arranged conducting members secured to said support member and engaged by said contacts, a pair of apertured ears extending upwardly from said tube, a motor including a clamp pivotally connected to said ears, a pair of wires connecting said motor to said pair of conducting members, blades rotated by said motor, a coil spring circumposed on each of said stems for urging said contacts upwardly, and a manually operable brake for controlling rotation of said tube, said brake comprising a pin depending from the top wall of said base, a pair of plates hingedly connected to said pin and each including a curved portion straddling said tube, a lip extending from said curved portion, a brake lining mounted on the inner surface of said curved portion and mounted for movement into and out of engagement with said tube, a shank extending through the lips of said plates, and a knurled knob for rotating said shank.

5. An electric fan comprising a hollow base including a top wall provided with a central opening, a hollow tube extending rotatably through the opening in said top wall, a plurality of arms secured within said base, a hollow bracket secured to said arms, an insulated body member positioned within said bracket, a securing element extending through said bracket into engagement with said body member, there being a pair of bores in said body member, each including a lower portion and an upper portion of increased diameter, there being a shoulder between the upper and lower portions of said bores, a pair of contacts slidably positioned in said bores and each having a stem extending through the lower portions of said bores, wires connecting said stems to a source of electrical energy, an insulated support member including a portion projecting into the lower end of said tube and secured thereto, a flange on the lower end of said support member abutting the bottom of said tube, a pair of conducting members secured to said support member and engaged by said contacts, a pair of ears extending upwardly from said tube, a motor including a clamp pivotally connected to said ears, a pair of wires connecting said motor to said pair of conducting members, and blades rotated by said motor.

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